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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,908	10/30/2003	Yun-Bok Lee	8733.494.20-US	5675
30827	7590	04/18/2006	EXAMINER	
MCKENNA LONG & ALDRIDGE LLP			KIM, RICHARD H	
1900 K STREET, NW			ART UNIT	
WASHINGTON, DC 20006			PAPER NUMBER	
			2871	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/695,908	Applicant(s) LEE, YUN-BOK	
	Examiner Richard H. Kim	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 34-59 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 34-59 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 34-44 and 46-59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashizawa et al. (US 6,456,350 B1) in view of Asada et al. (US 5,745,207) and Suzuki et al. (US 5,905,556).

Referring to claims 34-38, 40 and 51-59 Ashizawa et al. discloses a device and method comprising a substrate (Sub 1); a plurality of gate lines on the substrate (GL); a plurality of data lines crossing the gate lines on the substrate to define a pixel region, the data lines having at least one bent portion (DL); a common line substantially parallel to the gate line on the substrate (CL); a plurality of common electrodes connected to the common line (CT); and a switching element electrically connected to the gate and data lines (TFT). However, the reference fails to disclose that the common and pixel electrodes have at least one bent portion, and the common electrode has an obtuse angle (90 to 180 degrees) with the common line. The reference further does not disclose a connecting line electrically connected to the pixel electrode, wherein the pixel electrodes form an obtuse angle (90 to 180 degrees) with the connecting line, wherein the connecting line overlaps a portion of the gate line, wherein the connecting line and the gate line

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form a storage capacitor, wherein the common line crosses one of the bent portions of each common electrode.

Asada et al. discloses a device wherein the common electrodes have at least one bent portion, and have an obtuse angle (90 to 180 degrees) with the common line (Fig. 2, ref. 2, 2a); and the pixel electrodes have at least one bent portion (Fig. 2, ref. 4). Asada et al. further discloses a connecting line electrically connected to the pixel electrodes, wherein the pixel electrodes form an obtuse angle (90 to 180 degrees) with the connecting line, wherein the connecting line overlaps a portion of the gate line, wherein the connecting line and the gate line form a storage capacitor (Fig. 2, ref. 5), and wherein the common line crosses one of the bent portions of each common electrode (Fig. 2, ref. 2a),

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the common electrodes to have at least one bent portion, and an obtuse angle (90 to 180 degrees) with the common line; and for the pixel electrode to have at least one bent portion; and to employ a connecting line electrically connected to the pixel electrodes, wherein the pixel electrodes form an obtuse angle (90 to 180 degrees) with the connecting line, wherein the connecting line overlaps a portion of the gate line, wherein the connecting line and the gate line form a storage capacitor, and wherein the common line crosses one of the bent portions of each common electrode since one would be motivated to "display a high quality image having a large angle view and multiple tones" (col. 2, lines 58-61).

Even furthermore, the reference does not disclose that each of the plurality of common electrodes has a substantially sawtooth-shaped based in a region where each of the common electrodes connects to the common line; and wherein liquid crystal molecules in a portion of a

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domain near the common line between the corresponding electrodes and pixel electrodes have substantially a same rotational direction as liquid crystal molecules in a remaining portion of the domain.

Suzuki et al. discloses a device wherein each of the common electrodes has a substantially sawtooth-shaped base in a region where each of the common electrodes connects to the common lines and wherein the liquid crystal molecules in a portion of a domain near the common line between the corresponding electrodes and pixel electrodes have substantially a same rotational direction as liquid crystal molecules in a remaining portion of the domain (Fig. 20).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a device wherein each of the common electrodes has a substantially sawtooth-shaped base in a region where each of the common electrodes connects to the common lines and wherein the liquid crystal molecules in a portion of a domain near the common line between the corresponding electrodes and pixel electrodes have substantially a same rotational direction as liquid crystal molecules in a remaining portion of the domain since one would be motivated to suppress the creation of extraordinary domains (dark domains) (col. 8, lines 49-50).

Referring to claim 39, Ashizawa et al. discloses the device wherein one of the common electrodes elongates in a direction along the data line and crosses the gate lines, wherein the elongated common electrode electrically communicates with adjacent pixel regions (CT).

Referring to claim 41, Ashizawa et al. disclose the device wherein the common line elongates along the gate line (CL, GL).

Referring to claim 42, Ashizawa et al. discloses that the switching element is formed at a crossing portion of the gate and the data lines (TFT).

Referring to claim 43, Ashizawa et al. discloses that the switching element includes a gate electrode, a semiconductor layer, a source electrode and a drain electrode (TFT), but fails to explicitly disclose a gate insulator.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ a gate insulator in order to prevent short-circuiting.

Referring to claim 44, Ashizawa et al. and Asada et al. disclose the device previously recited. Ashizawa et al. further discloses that one of the pixel electrodes has a bent end portion over the drain electrode (Fig. 2, ref. PX).

Referring to claims 46 and 48, Ashizawa et al. discloses that the plurality of pixel electrodes, connecting lines, common lines and common electrodes are formed of transparent conductive material (col. 11, lines 23-25; col. 11, lines 61-65).

Referring to claims 47 and 49, Ashizawa et al. and Asada et al. disclose the device previously recited, but fails to disclose that the plurality of pixel electrodes, connecting lines, common electrodes and common lines are formed of an opaque metal.

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the plurality of pixel electrodes, connecting lines, common electrodes and common lines to be formed of an opaque metal. Examiner takes official notice that opaque metal is a well-suited conductor for liquid crystal display.

Referring to claim 50, Ashizawa et al. discloses that the common line is connected with other common lines in adjacent pixel regions (Fig. 1, ref. CL).

3. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ashizawa et al. and Asada et al. and Suzuki et al., as applied above, in view of Rho et al. (US 6,243,146 B1).

Ashizawa et al., Asada et al. and Suzuki et al. disclose the device previously recited, but fails to disclose that the pixel electrode contacts the drain electrode through the drain contact hole.

Rho et al. discloses the pixel electrode contacting the drain electrode through the contact hole (Fig. 3, ref. 140).

It would have been obvious to one having ordinary skill in the art at the time the invention was made for the pixel electrode to contact the drain electrode through the contact hole in order to provide a direct electrical connection to the pixel electrode.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard H. Kim whose telephone number is (571)272-2294. The examiner can normally be reached on 9:00-6:30 M-F.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571)272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard H Kim
Examiner
Art Unit 2871

RHK


ANDREW SCHECHTER
PRIMARY EXAMINER